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466	7590	01/26/2005	EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,157	FREY ET AL.	
	Examiner	Art Unit	
	Michael J. Yigdall	2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Disposition of Claims

4) Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-18 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 16 January 2002 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/16/02.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. .
5) Notice of Informal Patent Application (PTO-152)
6) Other: .

DETAILED ACTION

1. Claims 1-18 are pending and have been examined. The priority date considered for the application is January 16, 2002.

Drawings

2. The drawings are objected to because the shading used in some figures reduces legibility and may not be satisfactory for reproduction (see, for example, FIG. 14). See 37 CFR 1.84(m) and 37 CFR 1.84(l).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because the abstract must not exceed 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 6, 7, 10 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2002/0053070 to Seki ("Seki") in view of U.S. Pat. No. 5,778,368 to Hogan et al. ("Hogan").

With respect to claim 1, Seki discloses software development tool for embedded computer systems (see, for example, the abstract), wherein said software development tool, which is operable to run on a computer equipped with a user interface (see, for example, page 8, paragraph 110), comprises:

(a) a repository of configurable pre-programmed software components, each of which is a self-contained object comprising an underlying modular code base and configuration structure related to a specific infrastructure function in a hardware-independent, non-operating-system software infrastructure for an embedded computer system (see, for example, FIG. 4 and page 4, paragraph 49, lines 4-10, which shows a repository of logical components, and page 3, paragraph

43, lines 10-16, which shows that the logical components are platform-independent software components; also see, for example, page 3, paragraph 45, lines 13-24 and paragraph 46, lines 7-9, which shows that the software components have underlying physical components comprising a modular code base, and page 4, paragraph 49, lines 10-18, which shows that the software components have specification or configuration structures).

Although Seki does not expressly disclose that the software components are called embedded system infrastructure components (ESICs), Hogan discloses a repository of real-time embedded software (see, for example, the abstract) that facilitates the reuse of embedded software modules and subsystems (see, for example, column 6, lines 1-5). Similarly to Seki, each module or component has an attribute or configuration structure and an underlying code base (see, for example, column 6, lines 25-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with a repository of embedded software components, such as taught by Hogan, so as to apply the software development tool to embedded systems and facilitate the reuse of embedded software components.

Seki also discloses:

(b) a selection tool for enabling user selection of a number of ESICs from the repository (see, for example, page 4, paragraph 51, which shows a tool for selecting components);

(c) a configuration tool for enabling user configuration, for each selected ESIC, of the corresponding infrastructure function based on the underlying configuration structure of the ESIC in order to match the requirements of a target application (see, for example, page 4,

paragraphs 52 and 53, which shows a tool for configuring the components and designing a target application); and

(d) a code generator for extracting, for each selected ESIC, source code for the embedded system software infrastructure as a subset of the modular code base of the ESIC based on the user-selected configuration settings (see, for example, page 3, paragraph 44, which shows a code generator for extracting code and compiling the software based on the user's design).

With respect to claim 2, Seki also discloses a means for enabling user-selected interconnection of a number of configured ESICs and wherein said code generator is operable for generating separate source code relating to the interconnection of the ESICs based on at least part of the configuration settings of the involved ESICs (see, for example, page 4, paragraph 54, which shows a means for interconnecting the components, and page 6, paragraph 81, which shows that the code generator generates source code for the interconnections).

With respect to claim 4, although Seki does not expressly disclose the limitation wherein said configuration tool is operable for providing direct user feedback on the effects of a configuration setting in terms of at least one of resulting code size, execution speed, memory consumption, specific restrictions and performance trade-offs, Seki discloses validating specific restrictions in response to a configuration setting made in the user interface (see, for example, page 5, paragraphs 66-68).

It would have been apparent to one of ordinary skill in the art at the time the invention was made that such validation would further provide direct feedback to the user regarding the specific restrictions, so as to enable the user to correct invalid configuration settings.

With respect to claim 6, Seki also discloses the limitation wherein each ESIC further comprises a representation of the mapping between the configuration structure and the modular code base (see, for example, FIG. 20 and page 1, paragraph 8, which shows a correspondence or mapping between the software components and the physical components or modular code base), and said code generator is operable for determining which parts of the modular code base to extract as source code based on the mapping representation in combination with user-selected configuration settings (see, for example, page 5, paragraphs 74-75, which shows that the code generator extracts source code based on the correspondence or mapping and on the design information or configuration settings from the user).

With respect to claim 7, Seki also discloses the limitation wherein said modular code base is defined by a number of code blocks, and said mapping representation comprises, for at least one of said code blocks, a condition for extraction as source code that is based on at least part of said configuration structure, and said code generator is operable for determining whether said condition is valid in response to the corresponding configuration settings (see, for example, page 3, paragraph 46, lines 7-9, which shows that the modular code base is comprised of code blocks, and page 5, paragraph 69, which shows determining whether conditions of the configuration are valid before extracting source code).

With respect to claim 10, Seki also discloses the limitation wherein at least one ESIC comprises, in the modular code base, code for multiple implementations of a given sub-function, and said configuration tool is operable for enabling user configuration of the infrastructure function of the ESIC with respect to the type of implementation to be used for the given sub-

function (see, for example, page 6, paragraph 85, which shows that the modular code base provides for multiple implementations depending on the intended platform).

With respect to claim 15, Seki also discloses the limitation wherein said configuration tool is operable for presenting a number of configuration options automatically based on the underlying configuration structure of the ESIC, and for receiving, via the user interface, user-selected configuration settings in response to the presented options (see, for example, page 4, paragraph 53, which shows presenting configuration options in a menu to receive configuration settings from the user).

With respect to claim 16, Seki also discloses the limitation wherein the configuration structure of an ESIC object is defined by means of an extensible description language and at least one configuration page with said configuration options is automatically generated from the extensible description language definition of the configuration structure by an extensible description language transformer (see, for example, FIG. 8 and page 3, paragraph 43, which shows that the components and the corresponding attribute or configuration structures are defined by an extensible description language such as XML, and page 4, paragraph 50, which shows a user interface or configuration page presented in a Web browser in accordance with the XML definitions).

With respect to claim 17, Seki also discloses the limitation wherein said extensible description language is XML (see, for example, FIG. 8 and page 3, paragraph 43).

Although Seki does not expressly disclose the limitation wherein said extensible description language transformer is an XSLT processor, and said at least one configuration

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option page is provided in HTML format, Seki discloses providing a user interface in a Web browser (see, for example, page 4, paragraph 50).

Hogan further discloses that HTML is a standard format interpreted by Web browsers (see, for example, column 7, lines 22-24), and that HTML documents can be generated by a transformer (see, for example, column 7, lines 51-53).

It would have been apparent to one of ordinary skill in the art at the time the invention was made that the user interface of Seki would be provided in HTML format, so as to be interpreted by the Web browser.

It would also have been obvious to one of ordinary skill in the art at the time the invention was made to use a transformer, such as taught by Hogan, to generate the configuration page. Specifically, because the extensible description language is XML, as disclosed by Seki, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an XSLT processor as the transformer.

With respect to claim 18, Seki also discloses the limitation wherein said software development tool is carried by a computer-readable medium (see, for example, page 8, paragraph 108).

6. Claims 3, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Hogan as applied to claim 1 above, and further in view of U.S. Pat. No. 6,256,780 to Williams et al. ("Williams").

With respect to claim 3, Seki does not expressly disclose a number of configurable, pre-programmed ESIC connection components (ECs), each of which is a self-contained object

comprising an underlying modular code base and a connection structure related to the interconnection of given ESICs.

However, Williams discloses connector objects that delegate the process of establishing connections to components (see, for example, column 4, lines 7-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with connection components, such as taught by Williams, so as to delegate the process of establishing interconnections among software components.

Seki also discloses the limitation wherein said connection structure defines configuration dependencies between the configuration structures of the given ESICs, and said code generator is operable for extracting, for each user-selected EC, source code from the EC code base based on the ESIC configuration settings related to the connection structure of the EC (see, for example, FIGS. 7A and 7B, and page 4, paragraph 61 and page 5, paragraph 62, lines 3-12, which shows connection structures that specify or define the dependencies between interconnected components, and page 6, paragraph 81, which shows that the code generator extracts source code for the interconnections).

With respect to claim 8, Seki does not expressly disclose the limitation wherein a first, so-called inner ESIC is encapsulated into a second, so-called outer ESIC by means of a reference to the inner ESIC in the outer ESIC, and said inner ESIC is configured based on the configuration settings of the outer ESIC.

However, Williams discloses encapsulating a sub-assembly or inner component within an assembly or outer component (see, for example, FIG. 12 and column 12, lines 24-36).

Components can be assembled and encapsulated in this manner to provide only the needed functions and not more (see, for example, column 3, lines 32-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with encapsulation, such as taught by Williams, so as to provide only the needed functions of the software components and not more.

With respect to claim 9, Seki also discloses the limitation wherein said inner ESIC is configured by said outer ESIC via template selection, said outer ESIC having a number of predetermined templates for configuring said inner ESIC and one of said templates being selected based on the configuration settings of the outer ESIC (see, for example, page 7, paragraph 93, which shows configuring the components by template selection).

7. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Hogan as applied to claim 1 above, and further in view of U.S. Pub. No. 2003/0056193 to Perycz et al. ("Perycz").

With respect to claim 5, Seki does not expressly disclose the limitation wherein at least one ESIC is provided with a first configurable interface towards underlying hardware/lower-level functions and a second configurable interface towards the target application, and said configuration tool is operable for enabling user configuration of said first hardware interface and said second application interface, and said code generator is operable for extracting source code for said interfaces based on the user-selected configuration settings of the interfaces.

However, Perycz discloses a software development tool for embedded computer systems that enables modules to be reused with minimal modification (see, for example, page 3, paragraph 22). Each module is configurable (see, for example, page 1, paragraph 12, lines 7-9), and includes a management interface toward the target application (see, for example, page 2, paragraph 18 and paragraph 19, lines 1-9) and an initialization/shutdown interface toward the underlying hardware (see, for example, page 3, paragraph 21, lines 1-6 and 20-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software components of Seki with a hardware interface and an application interface, such as in the modules taught by Perycz, so as to further enable the components to be reused with minimal modification.

With respect to claim 11, Seki does not expressly disclose the limitation wherein at least one ESIC has a callback that can be called during execution of the infrastructure function of the ESIC and enable temporary application-specific processing.

However, Perycz discloses a software development tool for embedded computer systems that enables modules to be reused with minimal modification (see, for example, page 3, paragraph 22). Each module includes interface functions or callbacks for application-specific processing (see, for example, page 2, paragraph 19, lines 9-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software components of Seki with callbacks, such as in the modules taught by Perycz, so as to further enable the components to be reused with minimal modification.

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8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Hogan as applied to claim 1 above, and further in view of U.S. Pub. No. 2002/0059348 to Lee et al. (“Lee”).

With respect to claim 12, Seki does not expressly disclose the limitation wherein each ESIC further comprises underlying documentation information, and said software development tool further comprises a documentation tool for generating, for each selected ESIC, documentation adapted to the selected configuration settings of the ESIC.

However, Lee discloses a documentation tool for generating documentation based on the underlying documentation of each source file (see, for example, page 2, paragraph 18). The documentation tool operates on the source files regardless of the originating design tool used to develop the source files (see, for example, page 1, paragraph 17, 13-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with a documentation tool, such as taught by Lee, so as to generate documentation for the configured software components regardless of the origin of the components.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Hogan as applied to claim 1 above, and further in view of U.S. Pat. No. 6,182,160 to Burgess (“Burgess”).

With respect to claim 13, Seki does not expressly disclose:

(a) means for generating, for at least one source code file generated by the code generator, a source code signature representative of the corresponding ESIC and the user-selected configuration settings; and

(b) means for re-creating the ESIC set-up based on the source code signature.

However, Burgess discloses a software development tool for creating programs with interconnected components (see, for example, column 2, lines 13-19). The software development tool is operable to serialize the components, which is to say generate a signature of the components, so as to store and later retrieve the configuration of each component (see, for example, column 11, lines 42-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with serialization, such as taught by Burgess, so as to generate signatures for the software components and the corresponding configuration settings, thereby enabling the configuration to be stored and later retrieved.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Hogan as applied to claim 1 above, and further in view of U.S. Pub. No. 2003/0051230 to Molchanov et al. (“Molchanov”).

With respect to claim 14, Seki does not expressly disclose means for generating, for at least one source code file generated by the code generator, a source code checksum to enable verification that the source code file has not been tampered with.

However, Molchanov discloses generating a checksum to verify that a source file has not altered (see, for example, page 3, paragraph 33, lines 10-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the software development tool of Seki with checksum generation, such as taught by Molchanov, so as to verify that the source code has not been altered.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. U.S. Pat. No. 5,867,400 to El-Ghoroury et al. discloses a design method for an application specific processor.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Yigdall whose telephone number is (571) 272-3707. The examiner can normally be reached on Monday through Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Yigdall
Examiner
Art Unit 2122

mjy


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